

Interactive comment on “Development and Validation of a Dense 18-Year Time Series of Surface Water Fraction Estimates from MODIS for the Mediterranean Region” by Linlin Li et al.

Anonymous Referee #1

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Dear authors,

I enjoyed reading your manuscript on the use of MODIS data to develop and validate the surface water fraction estimates for the Mediterranean Region. Eventhough the surface water derivation from EO data was studied a lot in the last years, the authors demonstrate the importance of further refinement of knowledge on the surface water dynamics.

The temporal frequency of the Landsat dataset used to generate the GSW dataset (for the years before 2013) is still insufficient to represent the actual surface water dynamics, especially for the areas where the surface water is rapidly changing (reservoirs,

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floodplains, dynamic coastal areas). I liked how Figure 2 was used to demonstrate the missing monthly data history over time. However, I've missed the reference to that figure in the text, and the explanation on how this was determined? Does the figure show the missing value pixels (masked out) over sample locations shown in Figure 1? I'd even suggest that all figures should be referenced somewhere in the text.

P7L11 Please include a proper citation for GEE, e.g. <https://www.sciencedirect.com/science/article/pii/S0034425717302900>

Did you consider making your GEE scripts public, under a proper license? This will enable the reproducibility of your research and should be trivial to do.

P14 Validation: Spain is a very sunny area, how does your algorithm perform in temperate areas?

Figures 4-6 - you may need to upscale these map (using `reduceResolution()` in GEE), it's really hard to distinguish waterbodies at that scale, making these figures more or less useless.

Figures 7-8 - add a scatterplot for both charts will significantly improve understanding of the differences between these datasets

Sincerely yours, Referee

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